Appl. No. 10689517

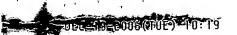
Amdt. Date: December 19, 2006 Reply to Office action of: 3/21/05

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

- 1. (currently amended) An automated method for controlling a solids inventory in a continuous backwashing up flow sand filter system treating a liquid inflow having impurities therein, the method comprising the steps of: monitoring an inflow head pressure at an influent inlet; converting said head pressure to an equivalent communication signal input to a computer; and-controlling an air inflow rate in the an air lift pump to maintain a target ratio range between a size of a captured solids inventory of the system and a size of a sand bed of the system; and establishing a set of optimal operation initial set points based on a quantity of polymer used, a normal air lift rate, and an expected inflow and outflow turbidity.
- 2. (cancelled)
- (currently amended) The method of claim 2-1 further comprising the step of adjusting
 the air flow rate to maintain a selected effluent quality over a range of influent flow
 rates for a selected inflow quality.
- 4. (original) The method of claim 3 further comprising the step of controlling head pressure and influent flow rate in light of past operating data for optimal performance.
- 5. (cancelled)
- 6. (new) An automated continuous backwashing upflow sand filter system apparatus for treating a liquid inflow having impurities therein so as to control a solids inventory, the apparatus comprising: a sand filter having a sand bed filled tank with an inlet port receiving the liquid inflow and an outlet port discharging an effluent; a water level monitor positioned at the inlet port thereby sensing a water level in a vertical pipe rising from the inlet port; an air flow rate monitor and controller receiving a control signal directing a rate of air flow to a lift pump thereby maintaining a target ratio



BEST AVAILABLE COPY

Appl. No. 10689517

Amdt. Date: December 19, 2006 Reply to Office action of: 3/21/05

range between a size of a solids inventory and a size of a sand bed within the system apparatus.

- 7. (new) The apparatus of claim 6 further comprising a diagonally oriented duct portion and a vertically oriented duct portion extending concentrically about the vertical pipe.
- 8. (new) The apparatus of claim 7 further comprising radially oriented distribution arms extending from the vertical pipe within a lower portion of the sand bed.